Defense Information Systems Agency

A Combat Support Agency

PACOM Conference
GEMSIS Update

19 Jul 2010

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Disclaimer

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GEMSIS Overview

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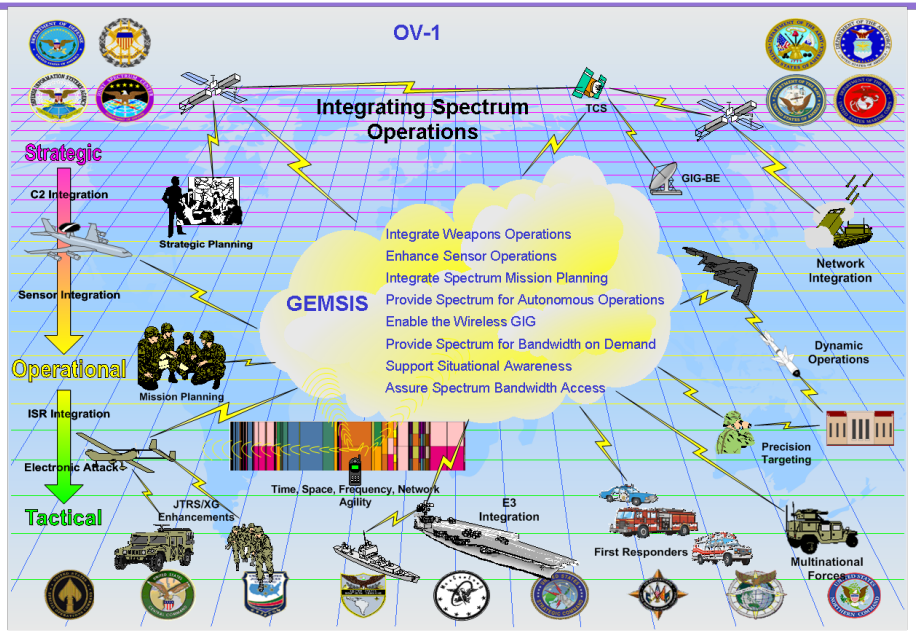
- Transforms spectrum operations to a responsive and agile capability to request, assign, allocate, and deconflict portions of the electromagnetic spectrum
- End-to-end spectrum supportability & frequency assignment
- Software definable radio waveform spectrum management support
- Strategic spectrum management planning
- Modeling and simulation for mission planning, rehearsal, and acquisition
- Increased common picture of spectrum situational awareness of friendly and hostile forces



Concept

- Provide solutions to current spectrum management capability gaps → Initial Capabilities Document (ICD)
- Adopt existing capabilities, buy commercial capabilities, and/or create new capabilities
- Provide net-centric, interoperable, integrated and collaborative spectrum management capabilities
- Support net-centric data environment for spectrum information
- Leverage Network-Centric Enterprise Services (NCES) infrastructure
- Accelerate warfighter's ability to effectively and efficiently use and manage the electromagnetic battle space to enable information superiority
- Deliver capabilities incrementally within the context of a streamlined and adaptive acquisition approach
- Fully Integrated, Networked, Decentralized, Adaptable → Decision Superiority

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GEMSIS Program Approach

Increment 1

- Transitioned capabilities from Coalition Joint Spectrum Management Planning Tool (CJSMPT) Joint Capability Technical Demonstration (JCTD)
  - Standalone Supports Frequency Assignment and Deconfliction Process
- Transitioned Host Nation Spectrum Worldwide Database Online (HNSWDO) Version 3.1.2
  - Web-based and Supports Spectrum Supportability Business Process
- Evaluate other opportunities

Increment 2

- Implement Approved Recommendations from GEMSIS Increment 2 Analysis of Alternatives (AOA)
  - AOA pending approval

Increment 3 and beyond

- Globally connected suite of services
- Enterprise Information Environment
- Enterprise services
- Improve upon current spectrum management systems
- Exchange information with related operational planning systems
- Comprehensive spectrum situational information

GEMSIS Increment 1 Capabilities

HNSWDO

- **Web-based capability that:**
  - **Provides worldwide visibility of host nation supportability of Radio Frequency (RF) spectrum dependent equipment.**
  - **Automates distribution of host nation coordination requests and Combatant Command submission of host nation supportability comments.**
  - **Enables managers to determine the historical supportability of other (or similar) systems in the same band.**
  - **Provides informed design decision-making concerning frequency bands, thereby mitigating the risk of acquiring potentially unsupportable RF dependent systems.**

CJSMPT

- **Define Electromagnetic Battlespace (EMB)**
  - **Create, refine, and manage the EMB**
  - **Create Task Force from specific and generic forces**
  - **View, manage, and update spectrum requirements**
- **Spectrum Requirements Analysis**
  - **Recommends required allotment based on modeling and simulation of EMB**
  - **Suggest specific frequencies for nomination and assignment taking into account user defined and/or host nation allocation tables**
  - **Determines and optimizes spectrum requirements then generates re-use plan**
- **Tactical Deconfliction**
  - **Predict incidents of tactical Interference prior to mission execution**
- **Tactical Interference Mitigation**
  - **Generate modifications to spectrum plan to minimize**

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HNSWDO and CJSMPT Development Activities

HNSWDO – Next Release June FY11, Version 3.1.5

- HNSWDO CCB conducted 6-8 April 2010 at the JSC to define v 3.1.5
  - Restructuring Inbox to better support business process
  - Addressing COCOM and FMO urgent issues.
  - Addressing defects
- Next GEMSIS CCB in Dec 10

CJSMPT – Next Army Release FY11, Version 2.1.1

- Developed as a Army JCTD to support CENTCOM and EUCOM requirements
- Army CCB held on Feb 2-3 to approve change proposals for next release
- Configuration control is transferred from the Army to the GEMSIS PMO at the end of FY10
- Future enhancements are needed to support additional COCOM requirements GEMSIS planning for v 2.1.2 in FY11

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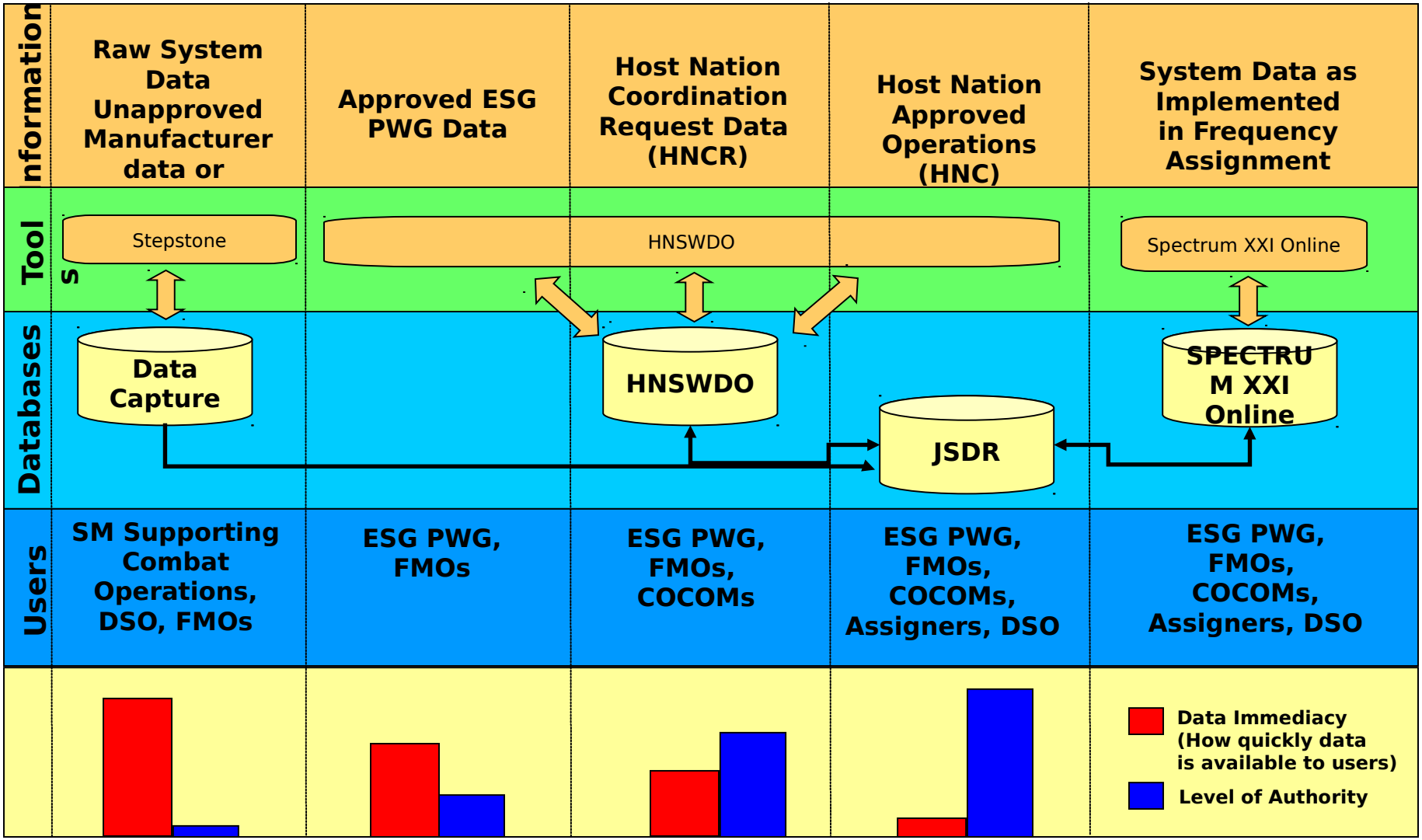
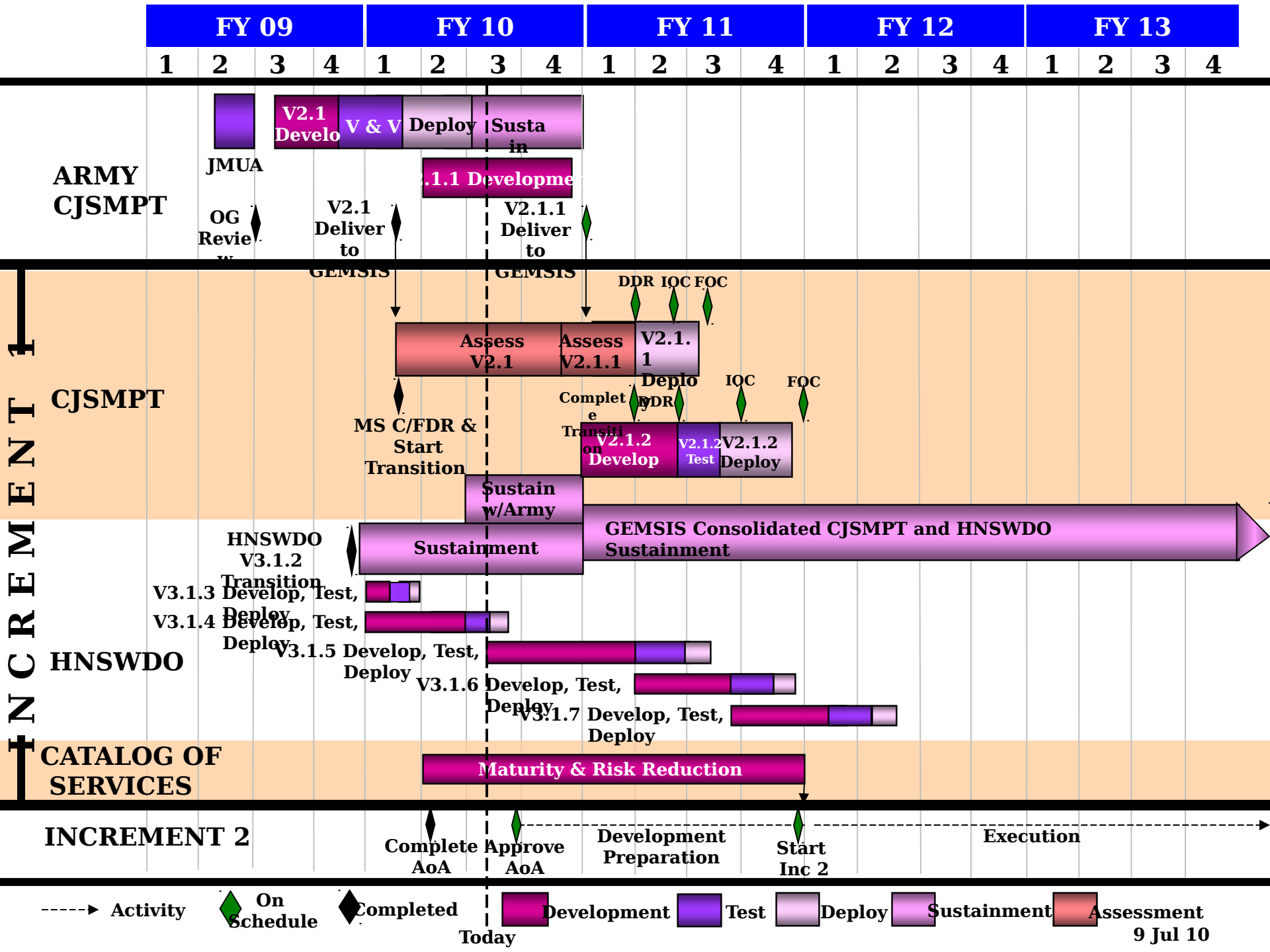
Evolution of Pub 8 Spectrum Dependant Equipment Data




FY 09
FY 10
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1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
ARMY CJSMPT
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V2.1 Develo
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V2.1.1 Deliver to GEMSIS
INCREMENT 1
CJSMPT
DDR
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Assess V2.1
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V2.1. 1 Deplo y
Complet e Transiti on
MS C/FDR & Start Transition
V2.1.2 Develop
V2.1.2 Test
V2.1.2 Deploy
Sustain w/Army
HNSWDO V3.1.2 Transition
Sustainment
GEMSIS Consolidated CJSMPT and HNSWDO Sustainment
V3.1.3 Develop, Test, Deploy
V3.1.4 Develop, Test, Deploy
HNSWDO
V3.1.5 Develop, Test, Deploy
V3.1.6 Develop, Test, Deploy
V3.1.7 Develop, Test, Deploy
CATALOG OF SERVICES
Maturity & Risk Reduction
INCREMENT 2
Complete AoA
Approve AoA
Development Preparation
Start Inc 2
Execution
Activity
On Schedule
Completed
Today
Development
Test
Deploy
Sustainment
Assessment
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GEMSIS High-Level Conceptual Architecture

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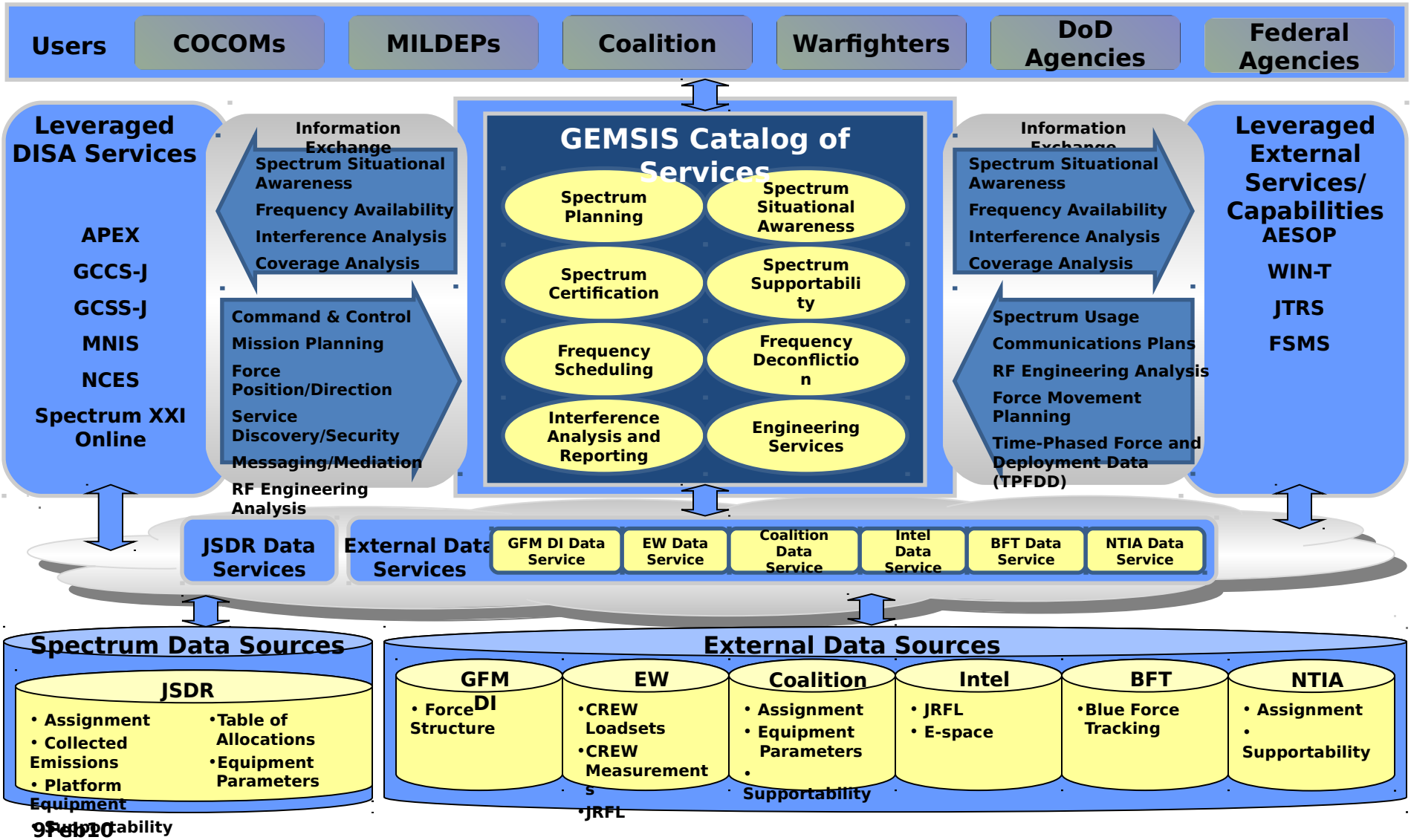

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Infrastructure: Why Catalog of Services?

"Don't give us more tools. Make the tools we have easier to use and work better together."
(feedback from the Navy/Marine Spectrum Manager's Conference, 2008)

- **Goal-oriented services**
- **Answers the statement: "I need to …"**
- **GOOGLE-like search to find available spectrum operations services**
- **TurboTax-like wizards to walk the user through more complex tasks**
- **Provide decision makers with the right tools & information**

Support the Warfighter

Leverage Net-Centric Services

- **HNSWDO, JSDR already available**
- **Additional services added as GEMSIS adopts, buys, or creates services across its seven domains**
- **Enable others to extend the catalog**

Automate Common SM Tasks

- **Remove/reduce human bottlenecks**
- **Consistent task handling**
- **Leverage all available services and databases to provide best and fastest results**

Reduce Overhead

- **Fewer middlemen**
- **Streamline processes**
- **Provides a consistent one-stop interface for the warfighter user**

GEMSIS Catalog of Service Evolution

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Stovepipe Applications & Databases

Migrate to Net-Centricity & SOA

User-Centric Catalog of Services

SXXI

SXXI

J SIR

J SIR

SCS

SCS

J ACS

CEOI

J DAWS

J ETS

HNSWD

HNSWD

Service Interfaces

Host Nation Supportability

Frequency Nomination

Spectrum Certification

Interference Analysis

Interference Reporting

Frequency Deconfliction

Frequency Scheduling

Spectrum Planning

Spectrum Situational Awareness

Functional Services & Support

Security & Policy Mgmt

Workflow Management

Business Rules Engine

Spectrum Modeling

Reporting & Analytics

Synchronization & Replication

Administration

Spectrum Engineering

Tactical Support

Data Layer

Frequency Data

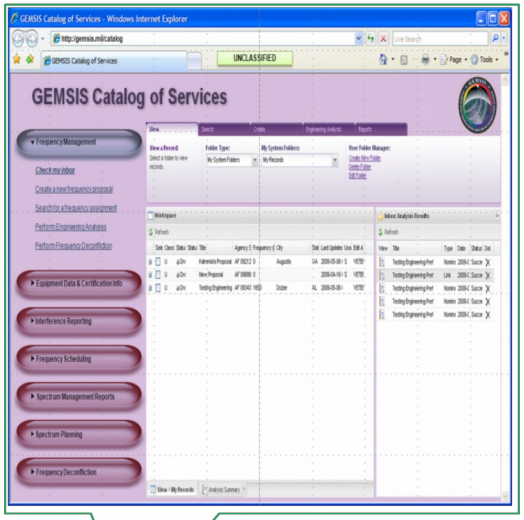
Equipment Data

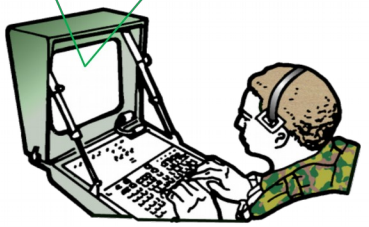
Certification Data

EME Data

Workflow Rules

Business Rules





Evolve Existing Tools (Adopt Where Appropriate)

Leverage DSO SOA Architecture (Adopt, Buy, or Create Services)

Overlay Catalog of Services (Create)

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